

1 Objectives

Variables have many different attributes. These attributes can become *bound* to the variable at different times.

- Know the difference between static and dynamic binding...
 - of value
 - of types
 - of location
 - of scoping (!)
- Know the difference between implicit and explicit declaration.
- Know what aliasing is.

2 Examples

Static Scope

```
1 int i = 2;  
2  
3 int foo() { return i * i; }  
4  
5 int bar() {  
6     int i = 10;  
7     return foo();  
8 }
```

Dynamic Scope

```
1 (setq i 2)           ;; global variable i = 2  
2  
3 (defun foo ()  
4     (* i i))  
5  
6 (defun bar ()  
7     (let ((i 10))    ;; local variable i = 10  
8         (foo)))      ;; call function foo
```

3 Problems

Try the following problems. In a few minutes the instructor will go over the solutions. Feel free to work with the person next to you!

- (qdb 171) Which of the following is an advantage of dynamic typing that cannot be found with static typing?
 1. You don't have to declare types.
 2. No runtime type errors can occur.
 3. Dynamically typed code will run faster than statically typed code.
 4. None of these are advantages.
- (qdb 172) A C++ method can be either static or dynamic. How is this accomplished?